Sandia National Laboratories / New Mexico

PROPOSAL FOR NO FURTHER ACTION ENVIRONMENTAL RESTORATION PROJECT SITE 53, BUILDING 9923 OPERABLE UNIT 1335

June 1995

Environmental
Restoration
Project

United States Department of Energy
Albuquerque Operations Office

PROPOSAL FOR ADMINISTRATIVE NO FURTHER ACTION

Site 53, Building 9923
Operating Unit 1335

SANDIA NATIONAL LABORATORIES/NEW MEXICO

1. Introduction

1.1. ER Site Identification Number and Name

Sandia National Laboratories/New Mexico (SNL/NM) is proposing an administrative no further action (NFA) decision for Environmental Restoration (ER) Site 53, Building 9923, Operable Unit (OU) 1335. ER Site 53, formerly included in OU 1298, was identified in the Hazardous and Solid Waste Amendment (HSWA) Module IV (Ref. 1) of the SNL/NM Resource Conservation and Recovery Act (RCRA) Hazardous Waste Management Facility Permit (NM5890110518) (Ref. 2).

1.2 SNL/NM Administrative NFA Process

This proposal for a determination of an administrative NFA decision has been prepared using the criteria presented in Section 4.5.3. of the SNL/NM Program Implementation Plan (PIP) (Ref. 3). Specifically, this proposal will "contain information demonstrating that there are no releases of hazardous waste (including hazardous constituents) from solid waste management units (SWMU) at the facility that may pose a threat to human health or the environment" [as proposed in the Code of Federal Regulations (CFR) Section 40 Part 264.51(a) (2)] (Ref. 4). The HSWA Module IV contains the same requirements for an NFA demonstration:

> Based on the results of the RFI [RCRA Facility Investigation] and other relevant information, the Permittee may submit an application to the Administrative Authority for a Class III permit modification under 40 CFR 270.42(c) to terminate the RFI/CMS [corrective measures study] process for a specific unit. This permit modification application must contain information demonstrating that there are no releases of hazardous waste including hazardous constituents from a particular SWMU at the facility that pose threats to human health and/or the environment, as well as additional information required in 40 CFR 270.42(c) (Ref. 1).

In requesting an administrative NFA decision for ER Site 53, Building 9923, this proposal is using existing administrative/archival information to satisfy the permit requirements. This unit is eligible for an administrative NFA proposal based on one or more of the following criteria taken from the RCRA Facility Assessment (RFA) Guidance (Ref. 5):

Criterion A: The unit has never contained constituents of concern

Criterion B: The unit has design and/or operating characteristics that effectively prevent releases to the environment

Criterion C: The unit clearly has not released hazardous waste or constituents into the environment

Specifically, ER Site 53 is being proposed for an administrative NFA decision because the

SWMU clearly has not released radioactive or hazardous waste or constituents into the environment (Criterion C).

1.3 Local Setting

SNL/NM occupies 2,829 acres of land owned by the Department of Energy (DOE) , with an additional 14,920 acres of land provided by land-use permits with Kirtland Air Force Base (KAFB), the United States Forest Service (USFS), the State of New Mexico, and the Isleta Indian Reservation. SNL/NM has been involved in nuclear weapons research, component development, assembly, testing, and other nuclear activities since 1945.

Site 53 (Building 9923) is a small concrete earth-covered storage igloo located east of SNL/NM Technical Area III, near Building 9920, (see Figure 1). The terrain is flat with some vegetation, primarily sage and tumbleweeds. The shallow subsurface geology is comprised of alluvial sediments, clay to gravel/cobble size. Depth to ground water at the nearby Chemical Waste Landfill wells has been measured at around 500 feet.

2. History of the SWMU

2.1 Sources of Supporting Information

In preparing to request an administrative NFA decision for ER Site 53, a background study was conducted to collect available and relevant site information. Background information sources included existing records and reports of site activity. In addition, interviews were conducted with SNL/NM staff and contractors familiar with site operational history. The study was completely documented and has provided traceable references which sustain the integrity of this proposal.

The following information sources, hierarchically listed with respect to assigned validity were available for use in the evaluation of ER Site 53:

- One preliminary radiation survey report, including data from radiation swipe surveys
- Two interviews with two ER Site 53 facility personnel
- Miscellaneous information sources including SNL/NM personnel correspondence (memorandums, letters, and notes regarding ER Site 53)
- Photographs and field notes from numerous site inspections conducted by SNL/NM staff
- The Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Report (Ref. 4) and CEARP records. (Copy contained in the SNL Environmental Operations Records Center)

Utilizing this information, a brief history of ER Site 53 and a discussion of all relevant evidence regarding past waste practices and releases at the site have been prepared and are presented in this proposal for an administrative NFA decision.

2.2 Previous Audits, Inspections and Findings

The original CEARP information from interviews conducted in 1985 states that, "Building 9923 contains some radioactive material from neutron activation experiments at the Nevada Test Site. Materials are confined to the building and no environmental release is expected" (Ref. 3). The CERCLA finding for this unit was negative for the Federal Facility Site Discovery and Identification Findings (FFSDIF), the Preliminary Assessment (PA), and the Preliminary Site Inspection (PSI). Therefore, no Hazard Ranking System (HRS) or Modified Hazard Ranking System (MHRS) migration mode scores were calculated.

2.3 Historical Operations

This facility is the Shock Wave Studies Laboratory and is operated by Organization 6423. Building 9923 is a small igloo-shaped storage building at the Shock Wave Studies Laboratory designed to store explosives. The igloo interior is a 3-feet x 3-feet steel-walled structure with a concrete floor. An earthen berm with approximate dimensions of 9 x 9 x 6 feet covers the structure to suppress accidental detonation of the stored explosives (see Figures 1, 2 and 3). The structure is locked so access is restricted. According to the interviews with individuals responsible for Building 9923, radioactive materials from neutron activation experiments at the Nevada Test Site were stored at this unit (Refs. 6 and 7). It was not known when the material was originally stored there, but is believed to have been stored for at least six years, from 1985-1991. The interviewees indicated the materials were properly contained, labelled, and stored, and no release to the environment has occurred from this unit (Refs. 6 and 7).

The radioactive material was completely removed in February of 1991 and follow-up swipe samples were collected by the SNL Radiation Protection Operations (RPO) group to test for contamination of the building (Ref. 6). Results from this swipe survey are discussed in Section 3.4.

3. Evaluation of Relevant Evidence

3.1 Unit Characteristics

Building 9923 is a small storage bunker designed to contain explosives. The bunker interior is lined with corrugated steel pipe and a concrete floor. The interior is about 3 x 3 x 3 feet and the exterior is covered by an earthen berm.

3.2 Operating Practices

Although it has been documented that radioactive materials were contained in Building 9923 there was never any documentation of a release (Refs. 6, 7, and 8). Based on

available information, the radioactive materials were properly contained and labelled. No environmental release ever occurred at this facility.

3.3 Presence or Absence of Visual Evidence

Inspection of the igloo during another follow-up sequence of swipe survey conducted by SNL/RPO in August 1994 indicated that there was no visual evidence of a release. There were no visible free liquids, solids, or stains which could have leaked from the Radiation waste container. This is supported by photographic documentation of the interior of the igloo, Building 9923 (see Figures 2, 3 and 4).

3.4 Results of Previous Sampling/Surveys

After the radioactive materials were removed from Building 9923 in 1991, follow-up swipe samples were collected by the RPO group to test for contamination of the interior of the building. The building is presently empty. According to the interviewees, no radiation contamination was detected in this survey (Ref. 6), however, the report from this survey could not be obtained.

A second radiation survey was conducted in the igloo in August 1994, to verify the interview statements regarding the 1991 swipe survey. The igloo interior was screened for alpha radiation and beta-gamma radiation with a HP-260 pancake probe. Also, eight swipe samples were collected from the floor and interior walls of the structure and analyzed for alpha and beta radiation. In the surface screening survey, all surfaces were found to be within the contamination limits prescribed by the DOE Radiological Control Manual (Ref. 9). Alpha and beta radiation in the swipe samples were below minimal detectable activities (MDA). No radiation contamination was detected in this second survey (see Attachment 1) (Ref. 10).

3.5 Assessment of Gaps in Information

Although there was no documentation of a release of radioactive materials during storage at Building 9923, recent swipe surveys taken in August 1994 verify that no release occurred.

3.6 Rationale for Pursuing an Administrative NFA Decision

Based on interviews with personnel involved with the facility, visual photographic evidence, the review of analytical results of swipe samples collected, and radiation screening of the unit, it is evident that:

1. According to interviewees, the neutron activation experiment materials that were stored in building 9923 were properly containerized, labelled and stored.

2. No release of radioactivity to the environment has occurred at this unit as determined from two radiation swipe surveys of the site which were conducted in 1991 and 1994.

4. Conclusion

Based on the evidence cited above, no potential remains for a release of hazardous waste (including hazardous constituents) which may pose a threat to human health or the environment. Therefore ER Site 53 is recommended for an NFA determination.

5. References[1]

U.S. Environmental Protection Agency (EPA), August 1993, Module IV of RCRA Permit No. NM 5890110518, EPA Region 6, issued to Sandia National Laboratories, Albuquerque, New Mexico.

U.S. Environmental Protection Agency (EPA), August 1992, Hazardous Waste Management Facility Permit No. NM 5890110518, EPA Region VI, issued to Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), February 1994, draft. "Program Implementation Plan for Albuquerque Potential Release Sites," Sandia National Laboratories, Albuquerque, New Mexico.

U.S. Environmental Protection Agency (EPA), July 1990. "Corrective Action for Solid Waste Management Units (SWMU) at Hazardous Waste Management Facilities Proposed Rule," *Federal Register,* Vol. 55, Title 40, Parts 264, 265, 270, and 271.

U.S. Environmental Protection Agency (EPA), October 1986, "RCRA Facility Assessment Guidance," EPA/530-86-053, PB87-107769, Washington, D.C.

Gaither, K. Memorandum to ERST Files, "ER Site 53, Building 9923," October 28, 1991.

Sandia National Laboratories/New Mexico (SNL/NM) Records Center Reference Number ER/7585/1335/53/INT/85-73

Garcia, D., Memorandum to Cox, W., "Changes to ER Program Site List," June 24, 1992.

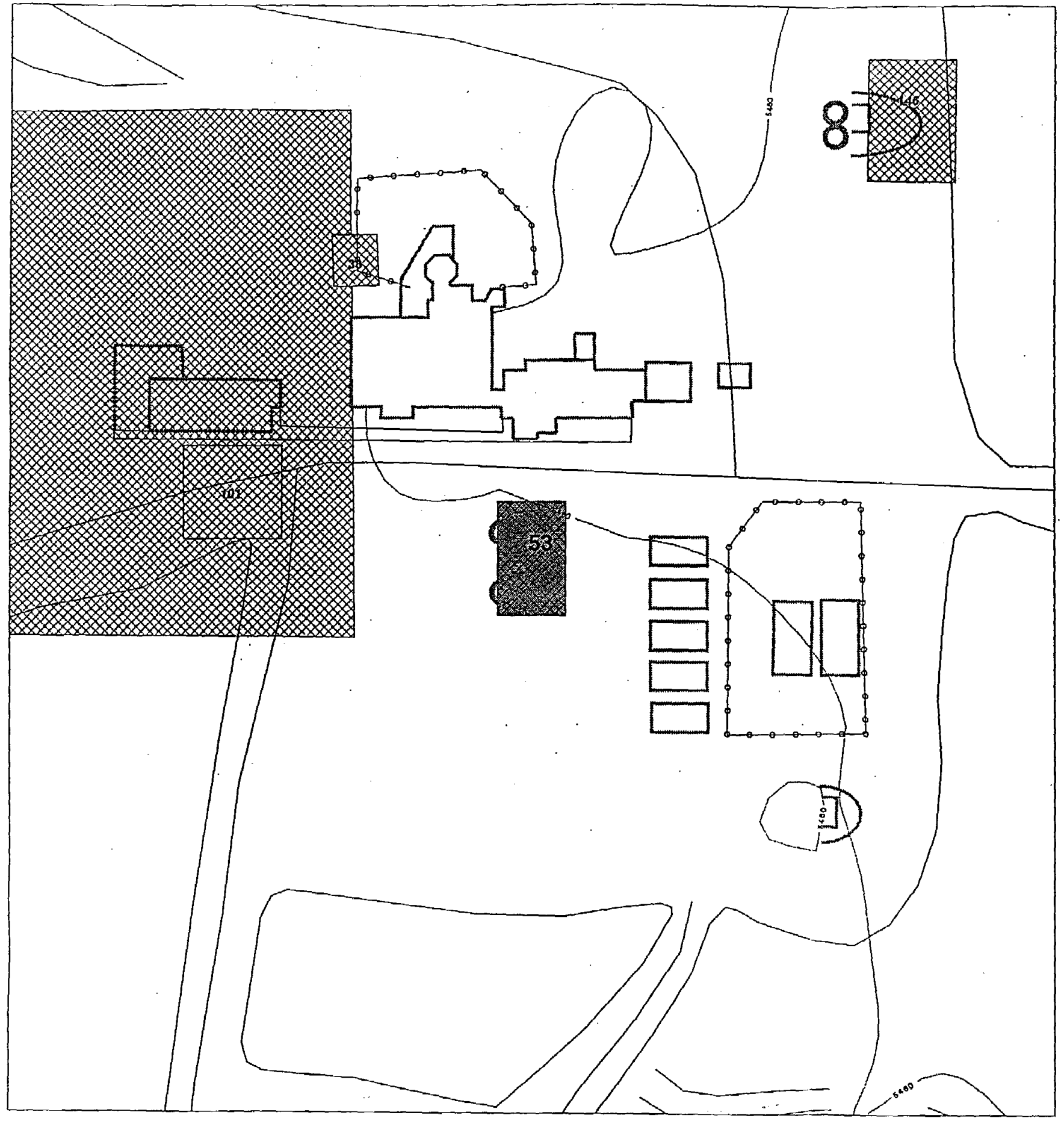
Sandia National Laboratories/New Mexico (SNL/NM) January 1995, *SNL Radiological Control Manual,* MN 471015, Issue A, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

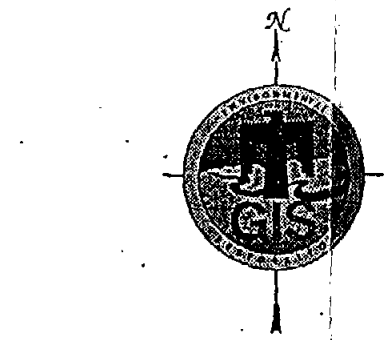
TA3 Office, Radiation Protection Operations, 7714, Memorandum to Skip Wrightson, "Radiological Survey Results, Bldg. 9923," August 25, 1994.

[1] Because many of the tests conducted at SNL/NM are classified, the SNL/NM reference numbers refer to a SNL/NM Records Center coding system intended to maintain the confidentiality of SNL/NM employees.

U.S. Department of Energy (DOE), September 1987. Draft "Comprehensive Environmental Assessment and Response Program, Phase 1: Installation Assessment Sandia National Laboratories - Albuquerque," Department of Energy, Albuquerque Operations Office, Environment, Safety and Health Division, Environmental Programs Branch, Albuquerque, New Mexico.

U.S. Environmental Protection Agency (EPA), April 1987. RCRA Facility Assessment Draft Report, "Final RCRA Facility Assessment Report of Solid Waste Management Units at Sandia National Laboratories, Albuquerque, New Mexico," EPA, Washington, D.C.





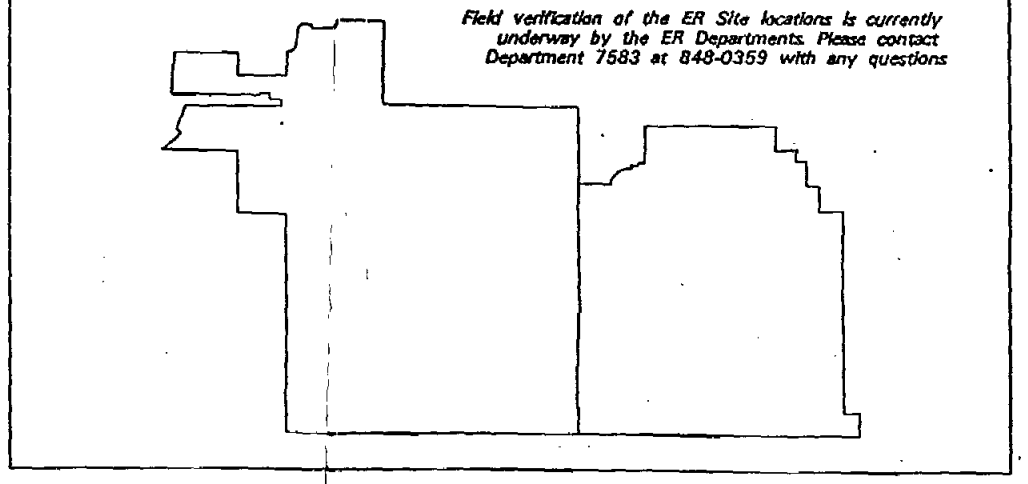
LEGEND

- KAFB Boundary
- Road
- Fence
- Contour
- Building
- Technical Area
- ER Site 53
- Other ER Site

0 50 100
Scale in Feet

0 20 40
Scale in Meters

Field verification of the ER Site locations is currently underway by the ER Departments. Please contact Department 7583 at 848-0359 with any questions



Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 1

Environmental Restoration Site Atlas
ER Site No. 53

Compiled by photogrammetric methods from aerial photography dated March 1989, March 1990, September 1991 and July 1992

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum

Atlas Mapsheet		Page	49

GIS MAP ID - 94049 drew.aml SNL ER GIS DEPT 7583 28-JUN-1994

Figure 2. Building 9923 exterior. Clipboard in foreground indicates scale.

Figure 3. Building 9923 Igloo exterior showing door

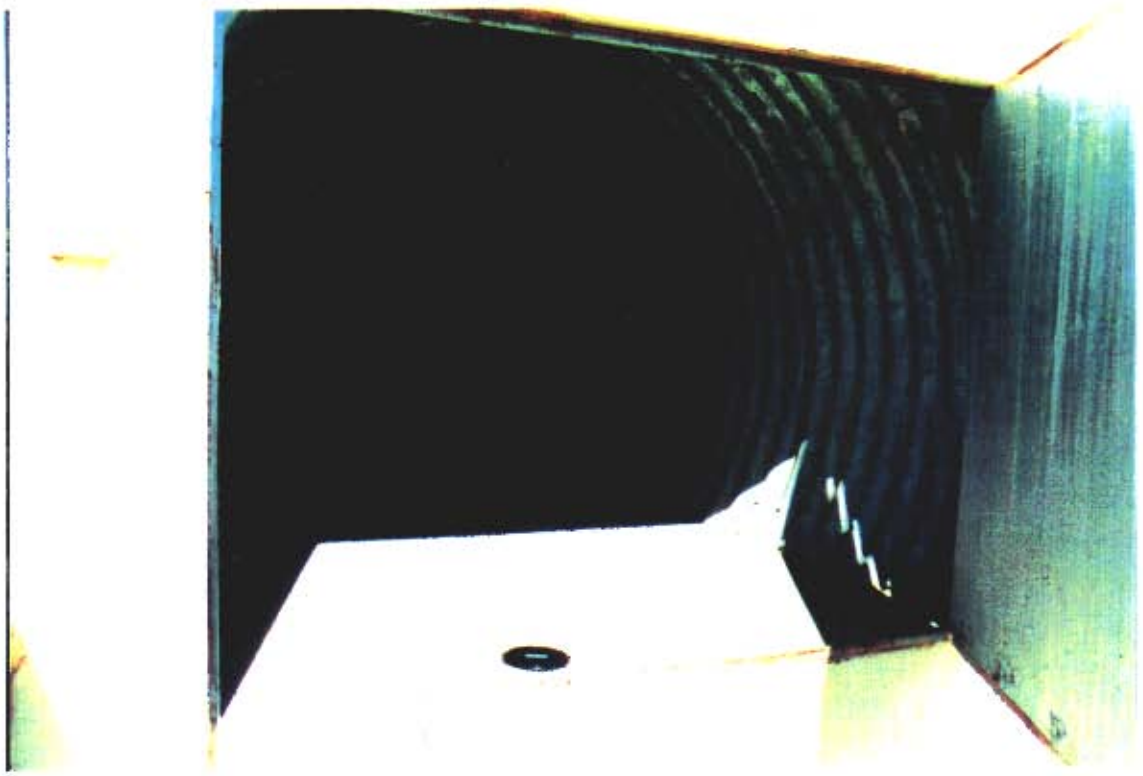


Figure 4. Building 9923- Interior. Lenscap in foreground indicates scale

ATTACHMENT 1

Radiological Survey results

Radiological Survery Form

Radiological Survey Map

Low Background Counting System - Smear Analysis

ATTACHMENT

Sandia National Laboratories
Albuquerque, New Mexico 87185

date: 8/25/94

to: Skip Wrightson, 7585

from: TA3 Office, Radiation Protection Operations, 7714

subject: Radiological Survey Results

The purpose of this memo is inform you that the radiological survey that you requested for Bldg. 9923

was completed on 8/24/94 with the following results:

X All surfaces < contamination limits of DOE Radiological Control Manual Table 2-2.

____ See attached survey results for areas/equipment found with contamination levels > limits of DOE Radiological Control Manual Table 2-2.

____ Radiation survey results:

.01 mR/hr

____ Radioactive materials tags attached, as necessary.

____ Follow-up actions required:

None.
Results Attached

The actual survey records will be kept by Dept. 7714. They are available for your review, if you desire.

RADIOLOGICAL SURVEY FORM

Location Bldg. 9923	Requestor/Dept. Skip Wrightson / 7585	Date 8/24/94	Time 1010
Purpose Check old Rad Mat'l Storage Area	Request # N/A	RWP # N/A	

Instrument and Probe Type and Serial Number		Surveyor(s) Printed Name	Surveyor(s) Signature
ASP-1 W/HP-260 #977		Hans O Ldewage	
ASP-1 W/AC-3 #786			
Bicron μRem #B974D			

#	Item Description	BETA-GAMMA CONTAMINATION Counting Data Attached ☒Yes ☐No % Eff. 30 /Isotope Default: cpm	Bkg. cpm	dpm / 100 cm2 (1)	(2) T/R	ALPHA CONTAMINATION Counting Data Attached ☒Yes ☐No % Eff. 50 /Isotope Default: cpm	Bkg. cpm	dpm / 100 cm2 (1)	(2) T/R	RADIATION SURVEY Bkg. .01 mR/hr: mrem/hr (3)	Distance
1	Floor	80	80	< 3816	T	10	10	< 73 *	T		
2	Floor	↓	↓	↓	↓	10	10	< 73 *	↓		
3	Floor	↓	↓	↓	↓	10	10	< 73 *	↓		Map
4	Floor	↓	↓	↓	↓	10	10	< 73 *	T		
5	South Wall	↓	↓	↓	↓	N/A	N/A	N/A	N/A	Sat	
6	West Wall	↓	↓	↓	↓	↓	↓	↓	↓		
7	North Wall	↓	↓	↓	↓	↓	↓	↓	↓		
8	Inside of Door	80	80	< 3816	T	N/A	N/A	N/A	N/A		

Note (1): If area other than 100 cm², record as dpm/probe, or dpm/LAW. Note (2): Total/ Removable. Note (3): Indicate type, if other than gamma (i.e. h or β).

Remarks: Scanned all interior surfaces W/HP-260 probe. Alpha counts at loc. 1→4 were 1 minute static measurements. * $\alpha Lc = 2.32\sqrt{10}/(.17 \times .59) =$ dpm/100cm²

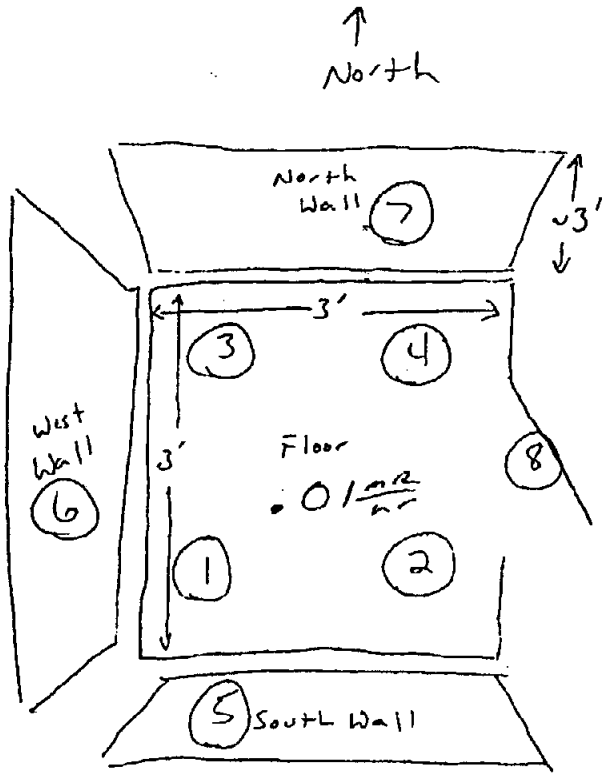
Reviewed by:

RADIOLOGICAL SURVEY MAP

Location: Bldg. 9923

Purpose: Check Old Rad Mat'l Storage Area

Date: 8/24/94



cates survey location number, refer to data sheet.

LB5100-W Low Background Counting System -- Smear Analysis

Date: 8/25/94
Counting Unit id: 1
Data file name: C:\LBXL\UNIT1\SME1E002.XLD
Batch Ended: 8/25/94 12:04
Crosstalk Correction: Not Applied

Alpha activity action level (DPM): 1000.00
Beta activity action level (DPM): 1000.00
Certainty level for MDA and flags: 95.00%
High Voltage Setting: 1440

Application Revision: 3
Application Version: Standard

Alpha efficiency log file: AM241AB
Alpha Efficiency: 40.99%
Alpha to Beta Crosstalk: 24.50%
Alpha Background (CPM): 0.27
Alpha Correction Factor: 1.000

Beta efficiency log file: SR90AB
Beta Efficiency: 48.60%
Beta into Alpha Crosstalk: 2.88%
Beta Background (CPM): 3.25
Beta Correction Factor: 1.000

Batch ID: Oldewage - 9923 Release Survey

	Alpha Activity				Beta Activity							
Carrier	DPM	σ	flags	MDA	DPM	σ	flags	MDA	Count time (min)	Alpha CPM	Beta CPM	Completion Date - Time
81	1.781	2.44	<MDA	10.79	-0.51	3.58	<MDA	17.83	1.00	0.730	-0.25	8/25/94 11:56
82	-0.659	2.44	<MDA	10.79	1.54	4.13	<MDA	17.83	1.00	-0.270	0.75	8/25/94 11:57
83	-0.659	2.44	<MDA	10.79	1.54	4.13	<MDA	17.83	1.00	-0.270	0.75	8/25/94 11:59
84	-0.659	2.44	<MDA	10.79	1.54	4.13	<MDA	17.83	1.00	-0.270	0.75	8/25/94 12:00
85	-0.659	2.44	<MDA	10.79	1.54	4.13	<MDA	17.83	1.00	-0.270	0.75	8/25/94 12:01
86	-0.659	2.44	<MDA	10.79	-0.51	3.58	<MDA	17.83	1.00	-0.270	-0.25	8/25/94 12:02
87	-0.659	2.44	<MDA	10.79	-4.63	2.09	<MDA	17.83	1.00	-0.270	-2.25	8/25/94 12:03
88	-0.659	2.44	<MDA	10.79	-0.51	3.58	<MDA	17.83	1.00	-0.270	-0.25	8/25/94 12:04

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____ Radiation survey results:

.01 mR/hr

____ Radioactive materials tags attached, as necessary.

____ Follow-up actions required:

None.
Results Attached

The actual survey records will be kept by Dept. 7714. They are available for your review, if you desire.

No Further Action Proposal (Site 53)

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RADIOLOGICAL SURVEY FORM

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Bldg. 9823	Skip Wrightson / 7585	8/24/94	1010
Purpose Check old Rad Mat'l Storage Area	**Request #** N/A	**RWP #** N/A	

Instrument and Probe Type and Serial Number		Surveyor(s) Printed Name	Surveyor(s) Signature
ASP-1 W/HP-260 #977		Hans O Idewage	
ASP-1 W/AC-3 #786			
Bicron µRem #B974D			

#	Item Description	BETA-GAMMA CONTAMINATION Counting Data Attached ☒Yes ☐No % Eff. 30 /Isotope Default: cpm	Bkg. cpm	dpm 100 cm2 (1)	(2) T/R	ALPHA CONTAMINATION Counting Data Attached ☒Yes ☐No % Eff. 50 /Isotope Default: cpm	Bkg. cpm	dpm * 100 cm2 (1)	(2) T/R	RADIATION SURVEY Bkg. .01 mR/hr: mrem/hr (3)	Distance
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2	Floor	(	(		(	10	10	< 73 *	(		
3	Floor					10	10	< 73 *	↓		Map
4	Floor					10	10	< 73 *	T		
5	South Wall					N/A	N/A	N/A	N/A	See	
6	West Wall					↓	↓	↓	↓		
7	North Wall	↓	↓	↓	↓	↓	↓	↓	↓		
8	Inside of Door	80	80	< 3816	T	N/A	N/A	N/A	N/A		

Note (1): If area other than 100 cm^2, record as dpm/probe, or dpm/LAW. Note (2): Total/ Removable. Note (3): Indicate type, if other than gamma (i.e. n or β).

Remarks: Scanned all interior surfaces W/HP-260 probe. Alpha counts at loc. 1→4 were 1 minute static measurements. * α Lc = $2.32\sqrt{10}/(17 \times .59)$ = dpm/100cm^2

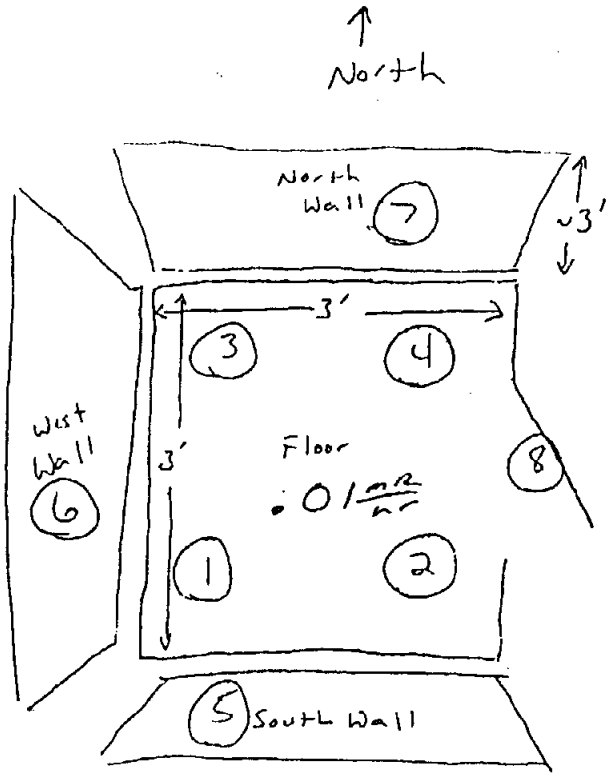
Reviewed by:

RADIOLOGICAL SURVEY MAP

Location: Bldg. 9923

Purpose: Check Old Rad Mat'l Storage Area

Date: 8/24/94



cates survey location number, refer to data sheet.

Pg 3 of 3

LB5100-W Low Background Counting System -- Smear Analysis

Date: 8/25/94
Counting Unit Id: 1
Data file name: C:\LBX\UNIT1\SMB1E002.XLD
Batch Ended: 8/25/94 12:04
Crosstalk Correction: Not Applied

Alpha activity action level (DPM): 1000.00
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Certainty level for MDA and flags: 95.00%
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Batch ID: Oldewage - 9923 Release Survey

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84	-0.659	2.44	<MDA	10.79	1.54	4.13	<MDA	17.83	1.00	-0.270	0.75	8/25/94 12:00
85	-0.659	2.44	<MDA	10.79	1.54	4.13	<MDA	17.83	1.00	-0.270	0.75	8/25/94 12:01
86	-0.659	2.44	<MDA	10.79	-0.51	3.58	<MDA	17.83	1.00	-0.270	-0.25	8/25/94 12:02
87	-0.659	2.44	<MDA	10.79	-4.63	2.09	<MDA	17.83	1.00	-0.270	-2.25	8/25/94 12:03
88	-0.659	2.44	<MDA	10.79	-0.51	3.58	<MDA	17.83	1.00	-0.270	-0.25	8/25/94 12:04